R-585-1-1-14

ENVIRONMENTAL PRIORITIES INITIATIVE
PRELIMINARY ASSESSMENT OF
SKF BEARING INDUSTRIES COMPANY
PREPARED UNDER

TDD NO. F3-9010-02
EPA NO. PA-2821
CONTRACT NO. 68-01-7346

FOR THE

HAZARDOUS SITE CONTROL DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

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NUS CORPORATION
SUPERFUND DIVISION

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SECTION 1

1.0 INTRODUCTION

1.1 Authorization

NUS Corporation performed this work under Environmental Protection Agency Contract No. 68-01-7346. This specific report was prepared in accordance with Technical Directive Document No. F3-9010-02 for the SKF Bearing Industries Company site, located in Shippensburg, Franklin County, Pennsylvania.

1.2 Scope of Work

NUS FIT 3 was tasked to conduct an Environmental Priorities Initiative (EPI) preliminary assessment of the subject site.

1.3 Summary

SKF Bearing Industries Company, located in Shippensburg, Pennsylvania, manufactures component parts used in the assembly of anti-friction bearings for the aircraft industry and various other industries. The SKF plant was established in 1950 in a building that, in the early 1900s, was reportedly a furniture factory. As part of the manufacturing system, SKF utilizes forming, surface finishing, and inspection processes. The forming operations are mechanical procedures involving machining, stamping, pressing, and grinding. Surface finishing operations include mechanical (vibrating) and chemical procedures that may involve cleaning, phosphatizing, electroplating, and bright dipping (acid pickling). The inspection operation utilizes a fluorescent penetrant dye system. Because of the wastewater that discharges from these operations, the facility operates under the jurisdiction of federal metal-finishing regulations (40 CFR Part 433).

In 1983, the Pennsylvania Department of Environmental Resources (PA DER) sampled the SKF production well and determined that the groundwater withdrawn from this well was contaminated by trichloroethene (TCE). Subsequent sampling showed TCE concentrations at this well in the range of 10 to 31 ppb, as reported by Lancy Laboratories and Lancaster Laboratories. Because SKF had been using TCE in its processing at this time, PA DER considered the plant a possible source of the groundwater contamination.

SKF discontinued the use of TCE at about the end of 1984.

SKF uses its production well for most of its water needs. This well withdraws 100 to 150 gallons per minute (gpm) of groundwater. Some water is also taken from the Shippensburg public water supply. Non-contact cooling water is currently reinjected into an on-site injection well at a rate of approximately 100 gpm. Wastewater, including sewage and pretreated process wastewater, is currently directed to the public sewer. In the past, treated process wastewater (along with cooling water) was directed to the injection well under a permit from PA DER for direct injection.

PA DER's 1983 sampling disclosed that the TCE-contaminated groundwater that was withdrawn by the production well was being reinjected at the injection well with little decrease or increase in TCE concentration.

The injection well currently used by SKF was drilled in 1975 to replace an older injection well that had become partially blocked.

In August 1983, PA DER conducted a survey of groundwater quality in the plant area by sampling several nearby wells, a spring, and a water-filled cave. These sample points are located northeast, east, and south of the plant. TCE was not detected at any of these sample locations.

SKF conducted its own survey in October 1983 by sampling several wells and a spring in the area. These sample points are located south and north of the plant. As with PA DER's survey, no TCE was discovered.

SKF began monthly sampling of its production well, injection well return flow, and sewer discharge in September 1983; the company currently continues this sampling.

Thirteen solid waste management units (SWMUs) have been identified for the site: a heavy metal treatment system, a batch treatment system, sludge settling tanks, old sludge filter beds, a hazardous waste storage area, a plating line room drum storage area, a copper destruct system, a cyanide destruct system, waste oil tank holding tanks, a freon distilling system, a metal chip storage area with oil collector, a Mecha-sludge settling tank, and a municipal trash dumpster. For a detailed description of each of the above-mentioned SWMUs and the wastes managed, please refer to section 4.1 of this report.

Five hazardous waste streams generated at this facility have been identified:

- Metal hydroxide sludge containing copper, nickel, and zinc is collected in the settling tanks of the heavy metal treatment system and the sludge settling tanks. This material is removed by an outside contractor for disposal.

- Post-treatment wastewater from the plating line rinse tanks and the heavy metal and batch treatment systems is discharged to the publicly owned treatment plant.

- Soluble and non-soluble waste oil that is used in machining processes and as a rust inhibitor is collected in small quantities from throughout the machine shops and from the oil collector in the metal chip storage area and stored in three above-ground tanks on site. This material is removed by Safety-Kleen, an outside contractor.

- Safety-Kleen 105 solvent is used and stored in small solvent bins located in the machine shop and a maintenance area in the boiler room. This material is also removed by Safety-Kleen.

- Copper cyanide, silver cyanide, and sodium cyanide are collected in drums when a plating line bath is dumped. This material is stored in the plating line room and is removed by an outside contractor for either disposal or reclamation.

Four nonhazardous waste streams have also been identified: municipal trash that is disposed into an outside dumpster for pick-up by a private trash hauler and metal chips from machining operations that are collected in drums and dumped into large dump trucks parked in the metal chip storage area. The chips are removed by an outside contractor and are either recycled or sold as scrap. Wastewater containing sanitary sewage is discharged to the publicly owned treatment plant. Non-contact cooling water that is used for cooling large air compressors is discharged to an on-site injection well.

Most residents in the study area are served drinking water by the Shippensburg Borough Water Authority (SBWA), which draws from three surface water intakes and a groundwater spring. The surface intakes are located outside the study area and upstream from the site. The groundwater spring is located 0.8 mile east-southeast of the site. Approximately 3,283 people reside outside the water authority supply area and are expected to maintain private domestic wells or springs for their source of potable water.

SECTION 2

2.0 THE SITE

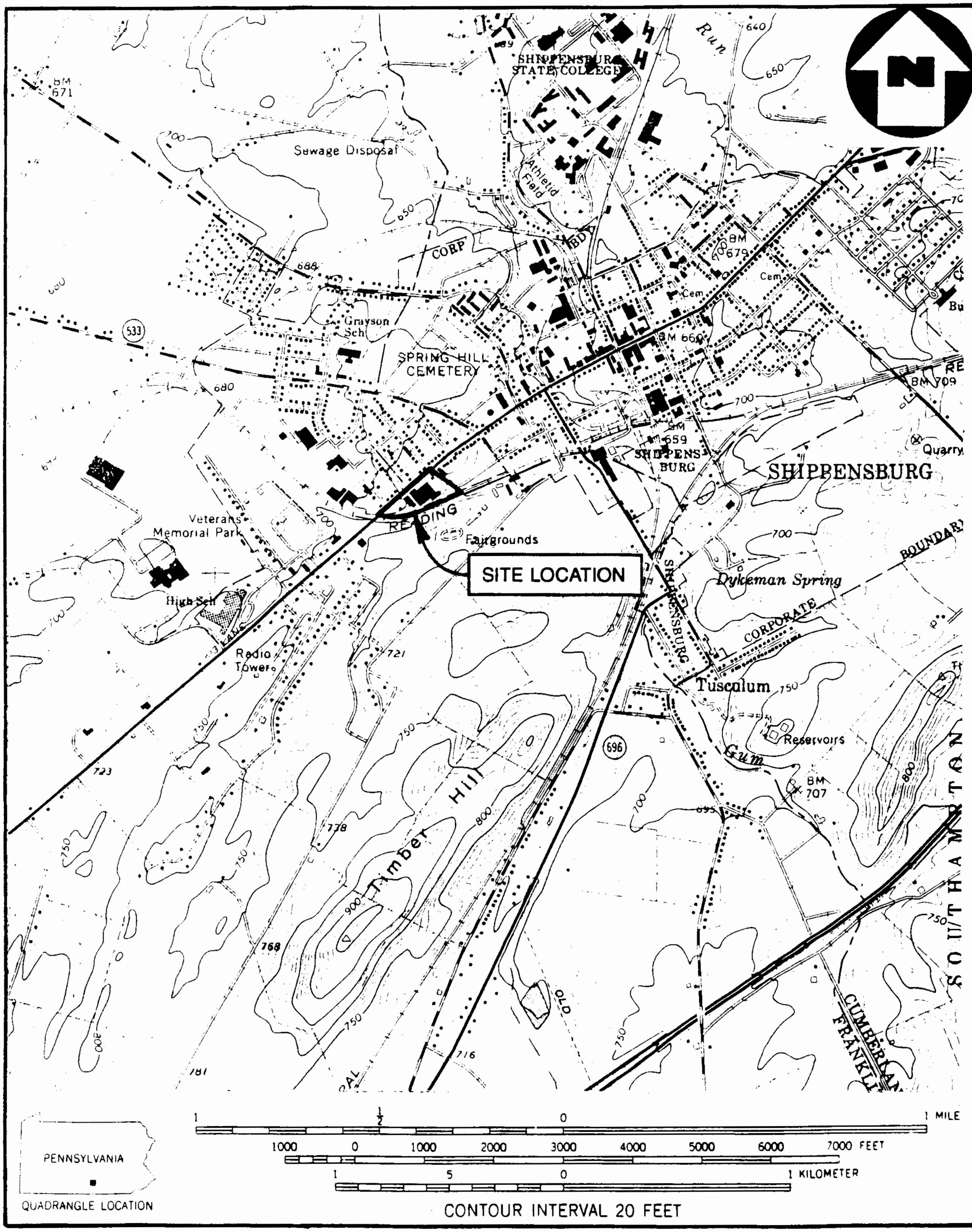
2.1 Location

The site is located at West King Street in Shippensburg, Franklin County, Pennsylvania (see figure 2.1, page 2-2). It can be located on the United States Geological Survey (U.S.G.S.) Shippensburg, Pennsylvania 7.5 minute quadrangle at 40° 02' 42" north latitude and 77° 31' 52" west longitude or 4-3/8 inches west and 8-1/8 inches north of the southeastern corner of the quadrangle.[1]

2.2 Site Layout

The SKF Bearing Industries Company site occupies approximately three acres in the southwestern portion of Shippensburg Borough (see figure 2.2, page 2-3). The facility comprises two buildings: a newer office building located on the southern side of West King Street and an older and larger production building located directly behind the office building. The southern side of the site is bordered by railroad tracks that separate the site from the Shippensburg Fairgrounds, located to the southeast. The areas northwest, north, and east of the plant are high-density residential, industrial, and commercial.[1,2,3]

The production building is primarily one floor, although there is a small basement. The main floor of the production building houses machining areas, a press room, tool rooms, an oil storage area, a zinc phosphatizing line, wastewater treatment systems, a hazardous waste storage area, plating rooms and laboratories, a raw material storage area, and other areas, including employee facilities. The basement contains the batch treatment systems, the final pH adjustment tank, the hazardous material storage area, compressors, a furnace, and a small maintenance shop (see figure 2.3, page 2-4). A production well, an injection well with air stripper, sludge settling tanks, and waste oil storage tanks are located outside the building. Three of five monitoring wells installed in 1984 are located on the site's property: one well is located at the northern corner of the property, one is located at the northwestern corner of the property, and one is located at the southeastern corner of the property. Site access is restricted by a chain-link fence around the eastern, southern, and western sides of the site and by an office building on the northern side. Access gates are located on the eastern and western sides of the site.[1,2,3]



SOURCE: (7.5 MINUTE SERIES) U.S.G.S. SHIPPENSBURG, PA QUAD.

SITE LOCATION MAP

SKF INDUSTRIES, SHIPPENSBURG, PA

SCALE 1: 24000

FIGURE 2.1

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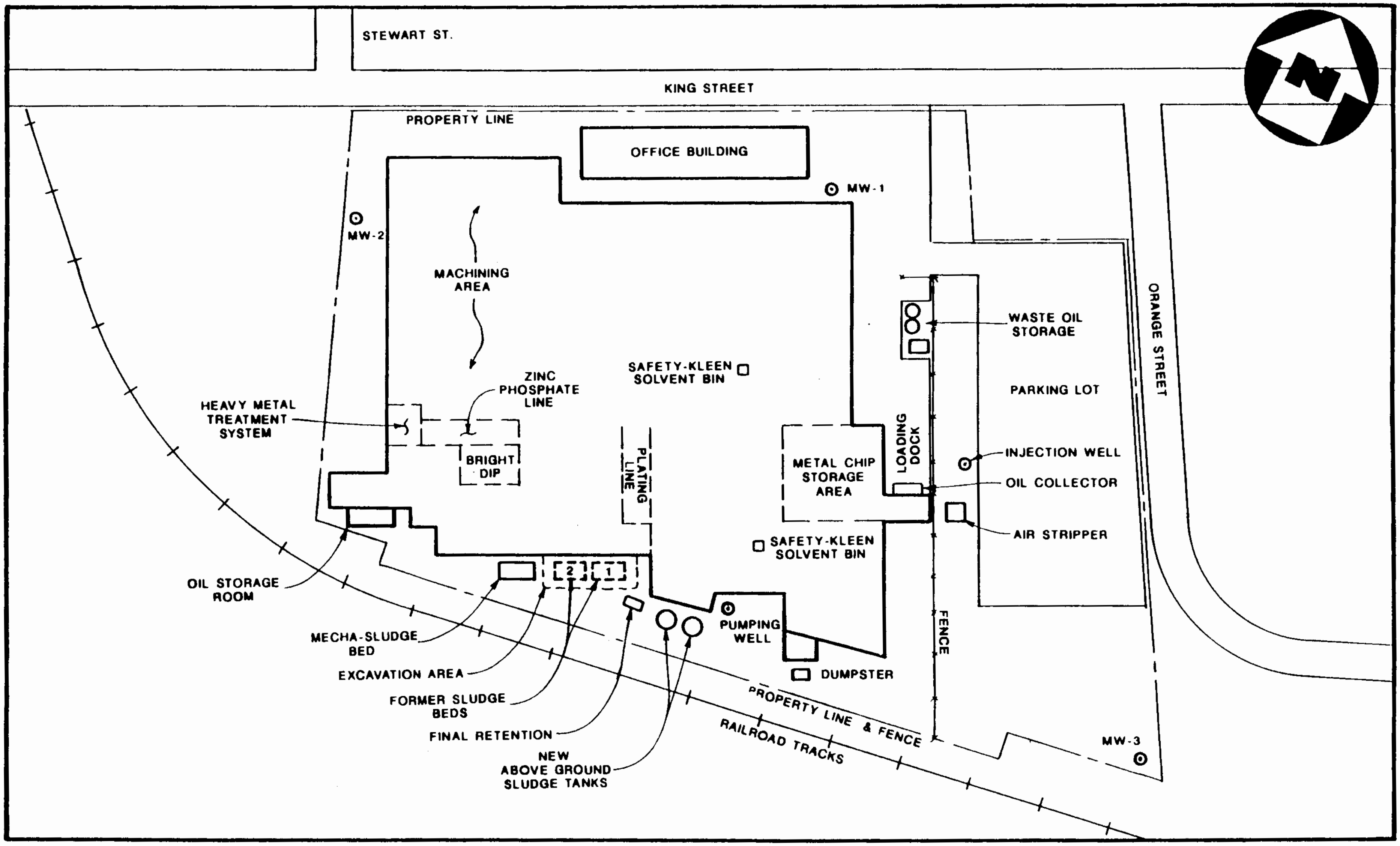

SITE LAYOUT
SKF INDUSTRIES, SHIPPENSBURG, PA
(NO SCALE)

FIGURE 2.2

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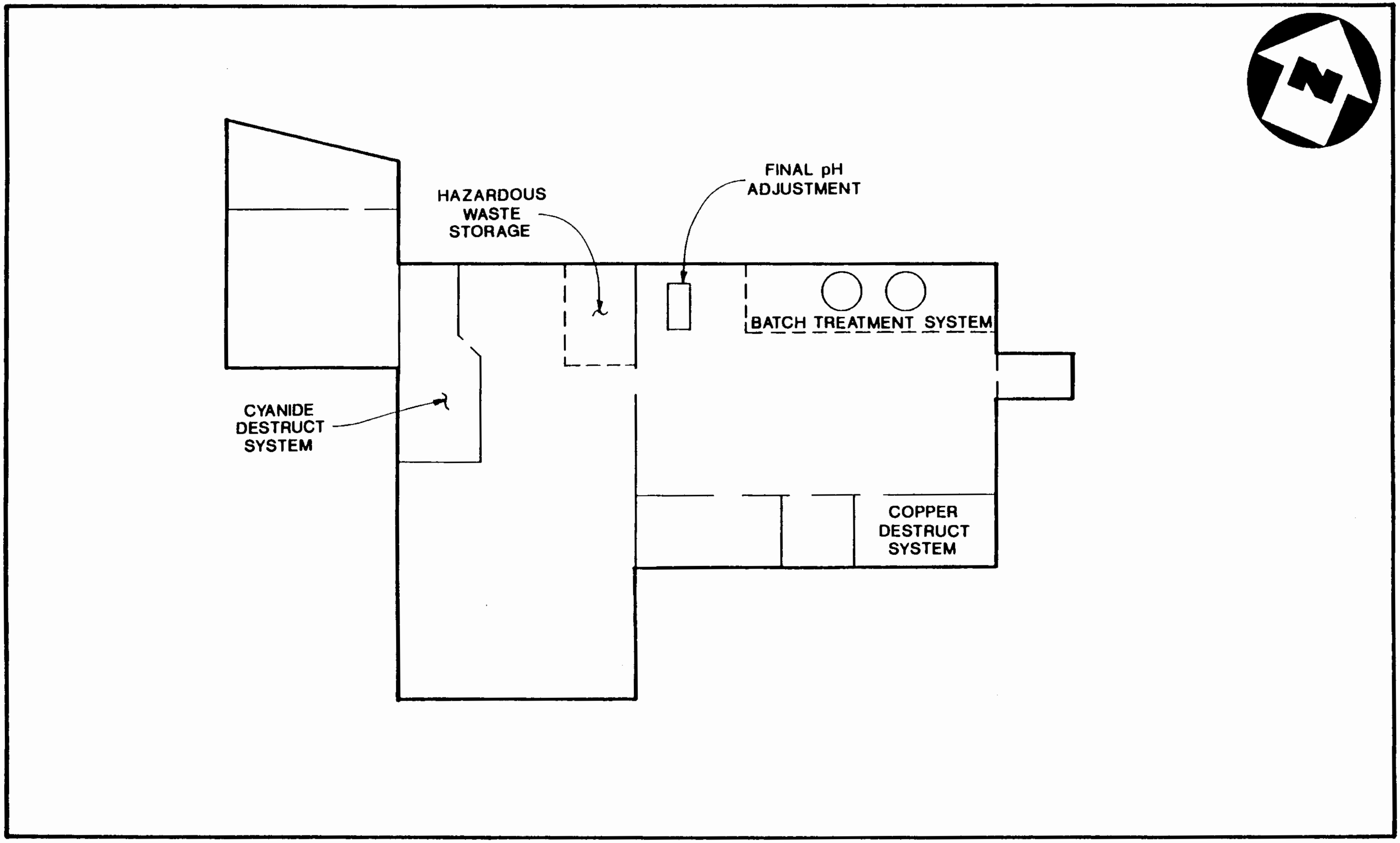

BASEMENT SITE SKETCH

SKF INDUSTRIES, SHIPPENSBURG, PA

(NO SCALE)

FIGURE 2.3

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2.3 Ownership History

The SKF Bearings Industries Company (also known as SKF Industries, Incorporated, Roller Bearing Division or SKF Roller Bearing Division) has owned and operated the site in Shippensburg since 1950. Before SKF's occupation, the facility is believed to have been a furniture factory dating to the early 1900s.[3,4,5] Information regarding who owned the furniture factory was not available.

2.4 Site Use History

The SKF Bearing Industries Company has manufactured bearing components since 1950. In the early 1900s, the facility was used as a furniture factory.[3,4]

Current operations involve the manufacture of component parts used in the assembly of anti-friction bearings for the aircraft industry and various other industries. As part of the manufacturing process, SKF utilizes forming, surface finishing, and inspection processes. The forming operations are mechanical procedures involving machining, stamping, pressing, and grinding. Surface finishing operations include mechanical finishing (vibrating) and chemical finishing procedures that may involve cleaning, phosphatizing, electroplating, and bright dipping (acid pickling). The bright dip or acid pickling process utilizes a sulfuric/nitric acid bath to remove surface oxidation for a clean shiny surface. The inspection operation utilizes a fluorescent penetrant dye system. Thermal finishing, a process that involved annealing or heat treating, was performed at the facility until the late 1980s.[4,6]

In 1964, two sludge filter beds were installed as a final step in the treatment of chemically treated wastes and spills from the plating and bright dip process and untreated waste from the phosphatizing process. The sludge filter beds were used primarily to settle and filter accumulated sludges from the alkaline and acid batch treatment systems. The beds were constructed with porous block walls that allowed the supernatant to permeate through the walls while retaining the sludge. The effluent was collected in a tile drain system and discharged under permit to an underground injection well. The sludge was periodically removed and disposed off site. Use of the sludge beds was discontinued in October 1980 after the modification of these structures into sludge tanks. The modification was performed by filling the block walls with concrete, parging the inside walls with one coat of cement and sand, and applying a thoro-seal coating over the parge. The use of the tanks was discontinued in October 1983 after the installation of above-ground holding tanks for the sludge. The above-ground holding tanks receive effluent from a treatment system for precipitating heavy metals and from the batch treatment systems. The sludge contains metal hydroxide, which is removed for off-site disposal by an outside contractor. The modified sludge beds/holding tanks were closed under the supervision of PA DER in October 1985.[4,7,8,9]

An on-site production well draws water for use as non-contact cooling water for the compressors, the plating baths, and general use. The facility also uses the borough water supply for the phosphate line, the penetrant inspection system, the cleaning and finishing processes, and sanitary use. The non-contact cooling water is injected into an on-site dry well. In September 1984, an air stripper was installed on the injection well to remove volatile organic hydrocarbon compounds from the effluent. The air stripper is still in use.[2,3,4,6]

2.5 Permit and Regulatory Action History

On August 14, 1980, SKF Bearing Industries Company filed a Notification of Hazardous Waste Activity with EPA for generation and treatment, storage, or disposal (TSD) of hazardous waste. In an acknowledgement by EPA, SKF was assigned EPA ID No. PAD003026606 on October 9, 1980. SKF submitted a Part A Hazardous Waste Permit Application on November 14, 1980. Interim status was initially denied by EPA because of an incomplete Part A Permit Application. SKF submitted a revised Part A on July 15, 1981; interim status was approved on August 10, 1981.[5,10,11,12,13,14]

In response to the request for Part B of the Hazardous Waste Management Permit Application, SKF claimed exemption from Part B due to the permit-by-rule exclusion. SKF submitted a Notification of Hazardous Waste Activity to PA DER as a formal request for exemption.[15] In June 1983, the EPA Waste Enforcement Section requested PA DER to verify that SKF was exempt from filing a Part B through a permit-by-rule. EPA questioned the exemption because SKF's Part A showed drum and tank storage and references to concrete lagoons that may require closure. A letter dated September 3, 1985 from Frank Buccieri, SKF plant engineer, to Robert Benvin, PA DER, Bureau of Solid Waste Management, refers to a conversation wherein Mr. Benvin indicated that SKF's Shippensburg facility could file as a protection filer and could change its status to permit-by-rule.[16,17] Permit-related correspondence can be found in appendix A.

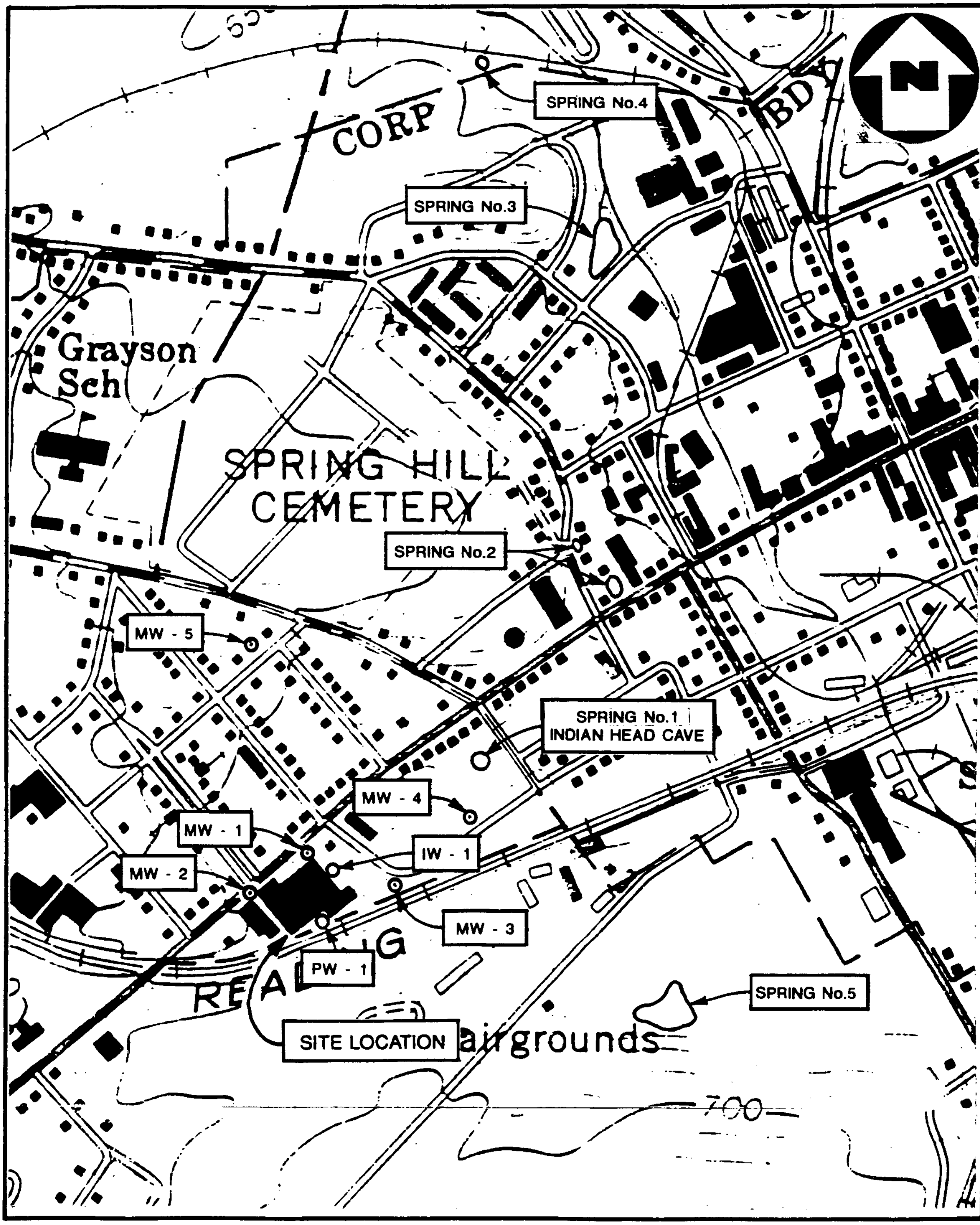
In 1983, PA DER detected TCE contamination in samples from SKF's on-site pumping well; the TCE concentration was in the range of 10 to 31 ppb. It was further disclosed by PA DER that the TCE-contaminated groundwater withdrawn from this pumping well was being reinjected at the on-site injection well with little increase or decrease in TCE concentration. PA DER and SKF conducted separate surveys in August and October 1983, respectively, of groundwater quality in the plant area. The surveys were performed by sampling wells, springs, and a water-filled cave (Indian Head Cave) north, northeast, east, southeast, and south of the plant. TCE was not detected in any of the samples; the laboratory reports for PA DER's and SKF's preliminary survey data are included in appendix B. SKF retained Nassaux-Hemsley, Incorporated (NHI) in June 1984 to conduct a hydrogeologic study of the source and extent of the TCE contamination.[3]

Following the installation of four monitoring wells (MWs) on and near the site in July and August 1984, NHI collected samples from the four MWs, the SKF production well and injection well, and Indian Head Cave. In late September, a fifth monitoring well was installed and sampled, along with four springs in the area [see figure 2.4 (page 2-8) for sample locations].[3] Well logs can be found in appendix B.

TCE concentrations for the August through October 1984 sampling are shown below.[3]

Sample Location	Date Sampled	TCE Concentration (ppb)	TCE Concentration of Split Sample (ppb)
MW no. 1	August 27, 1984	7.4	10
MW no. 2	August 27, 1984	less than 0.5	less than 2
MW no. 3	August 27, 1984	0.9	3
MW no. 4	August 27, 1984	less than 0.5	less than 2
MW no. 5	September 28, 1984	less than 1.0	
production well	August 27, 1984	15	15
injection well	August 27, 1984	14	13
cave	August 27, 1984	less than 0.5	less than 2
spring no. 2	September 28, 1984	less than 1.0	
spring no. 3	September 28, 1984	3.0	
spring no. 4	October 8, 1984	less than 1.0	
spring no. 5	September 28, 1984	less than 1.0	

The highest TCE concentrations (14 to 15 ppb) were recorded at the pumping and injection wells. TCE was not detected in MW nos. 2, 4, and 5, Indian Head Cave, or spring nos. 2, 4, and 5. TCE was detected off site at 3 ppb in spring no. 3; however, this level is still below the drinking water limit of 4.5 ppb. A comparison of data collected during SKF's monthly sampling of its pumping well and injection well was made against observed water levels in the nearest U.S.G.S. observation well. The apparent correlation between TCE concentrations at the SKF pumping well and the U.S.G.S. well hydrograph indicated an increase in TCE during periods of high rainfall or snow melt infiltration and decreases in the absence of such infiltration (see appendix C for plots). NHI concluded that the source of the TCE was retained in the soil above the water table and that significant recirculation of water between the injection and pumping wells was not occurring. If it were, the TCE concentration would not decline so readily at the pumping well; the concentration would be maintained by the reinjected water, which had the same TCE concentration as the pumped water. The problem can be effectively eliminated by removing all significant TCE-contaminated soil and treating the reinjected water with an air stripper.[3] The October 1984 groundwater study can be found in appendix B.



NASSAUX - HEMSLEY SAMPLE POINTS, 1984

SKF INDUSTRIES, SHIPPENSBURG, PA

(SCALE UNKNOWN)

FIGURE 2.4

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In July 1984, under subcontract to NHI, Groundwater Technology performed an aeration pilot test of an air stripper at the SKF facility. Test results indicated the potential for removal efficiency of up to 95.8 percent or a stripper effluent of 0.5 ppb TCE.[18]

In response to questions by PA DER about the groundwater quality study, NHI resampled the five monitoring wells on October 8, 1985. Sample analysis detected only chloroform (71 ppb) and dichlorobromomethane (2 ppb) in MW no. 2 and only chloroform (1.0 ppb) in MW no. 5. A response to PA DER's question and sample results were presented by NHI in an addendum to the October 1984 groundwater study.[19] A preliminary copy of the addendum is included in appendix B.

In addition to the groundwater quality study initiated in 1983 in the site area, SKF was anticipating closing its former sludge filter beds and installing a new waste filter system. To determine if any migration of contaminants to the environment had occurred, SKF conducted a preliminary site investigation in June 1983. The preliminary test results indicated low levels of metals in leachate from soil samples taken around the beds. In a meeting with PA DER in April 1984, it was determined that additional sampling would be required before the closure of the sludge beds.[7]

In June 1984, a second sampling program was conducted in and around the beds for SKF by Lancy Laboratories, Division, Lancy International, Incorporated. In addition to metal concentration, the 1984 samples were analyzed for volatile organics because low levels of TCE had been previously detected by PA DER in the plant's water supply well. Analysis of the 1984 samples revealed TCE and low levels of metals in the soils beneath and around the beds. A composite of samples from beneath the beds contained 215,000 ppb TCE; composite samples from around the beds contained 175 and 155 ppb TCE, and a sample deemed "background" contained 280 ppb TCE. Chloroform (980 ppb) and tetrachloroethylene (4,670 ppb) were also detected in the composite sample from under the filter beds, although these contaminants were not addressed in the initial closure plan.[7,20] For sample locations see appendix B; sample data can be found in appendix D.

The results of this site evaluation were utilized by Lancy Laboratories to develop a closure plan for SKF. The intended approach to closure was to remove all contaminated materials. The initial plan involved the removal of the sludge bed structures and a three-foot layer of soil from beneath the beds that had been contaminated by "inadvertent" discharges of TCE into the sludge beds. All materials removed were to be transported by a licensed hauler to a licensed hazardous waste facility for disposal. No actual waste was to be removed during the closure because the waste sludge had been removed and hauled off site when the filter beds were taken off line in October 1983. It was anticipated that, due to the presence of a thick clay layer beneath the filter beds, there would not have been any appreciable migration of contaminants below the beds. Once the excavation was complete, verification testing would be performed on the exposed soil layer. It was proposed that contamination removal was complete when verification testing did not detect TCE above 300 ppb (the approximate measured "background" level). If results of these analyses verify that the remaining soil was not significantly contaminated, closure was to proceed with site restoration. It was intended that the site restoration would function to prevent runoff and erosion and to prepare the site for future construction. It was intended that post-closure care would be minimal because all contaminated materials were to be removed from the site.[7] A copy of the September 1984 closure plan for the sludge filter beds can be found in appendix D.

In a review of the closure plan, PA DER rejected the idea that the clay layer would have been an effective barrier to the migration of organic solvents such as TCE. PA DER believed that the sample results indicated the TCE contamination to be much more extensive than the closure plan revealed and that excavation of only three feet of soil from below the beds was not acceptable. Furthermore, PA DER indicated that the estimated permissible concentration for TCE to be 5.6 ppb in soil and rejected the level of 300 ppb as proposed in the plan. Because TCE is not a naturally occurring compound, true background should indicate a level below detection. PA DER also required that analysis of verification samples after excavation include chloroform and tetrachloroethylene and TCE.[20]

In April 1985, a consultant for SKF recommended that the sludge beds be removed as soon as possible to prevent the TCE concentrations in groundwater from increasing with spring rain flushing of contaminated soil. PA DER approved the removal of the sludge beds during a phone conversation with SKF on April 22, 1985.[21,22,23] In May 1985, the two sludge beds and surrounding soil were therefore excavated and disposed per applicable regulations.[8] Soil samples collected after the structures were removed were analyzed for volatile organics and metals. Analysis detected TCE (710,000 ppb), 1,2-trans-dichloroethylene (1,800 ppb), toluene (240 ppb), and tetrachloroethylene (3,200 ppb). Metals analysis was performed on composite samples from two locations in the area of each former bed. Analysis detected cadmium (4.1 ppm), chromium (48 ppm), copper (1,100 ppm), lead (155 ppm), nickel (140 ppm), and zinc (2,800 ppm).[8,24] Sample locations and sample analysis can be found in appendix E.

Considerable discussion occurred between PA DER, EPA, SKF, and SKF's consultants regarding the classification of the sludge beds as tanks or surface impoundments and the implication this would have on closure proceedings. A classification of surface impoundments implies that waste and/or contaminated soil may remain on site after closure and would require that the facility submit a post-closure permit application to PA DER and EPA and perform post-closure monitoring. It was, however, SKF's intention, as stated in the closure plan, to completely remove the structures and any contaminated soils.[7,20,22] EPA's position, as of September 1985, was that, because PA DER was requiring removal of the contaminated soils below and around the units and that the units had already been removed, the issue as to whether the beds were classified as tanks or surface impoundments was moot.[25] Subsequent correspondence indicated PA DER's agreement that the sludge beds should be considered tanks, and closure as such was approved.[9,26,27]

On December 23, 1985, EPA Hazardous Waste Management Division requested that SKF (pursuant to the provisions of section 3007 of RCRA, 42 U.S.C.) supply all relevant information regarding the site location, the monitoring, production, recovery, and injection wells, surface water and springs, hydrogeological information, sampling data, groundwater studies, closure plans, etc. The requested information was sent to EPA by SKF on January 16, 1986.[28,29] Additional correspondence between SKF and EPA concerned SKF's interest in the EPA review of the submitted information and whether SKF could proceed with its plans to construct a facility for the above-ground sludge tanks. On July 23, 1986, EPA informed SKF that it could proceed with its plans subject to PA DER approval.[30,31]

Wastewater discharges from SKF's manufacturing operations place the facility under the jurisdiction of federal metal-finishing regulations (40 CFR Part 433). Federal pretreatment compliance requirements allow SKF to provide certification of compliance with an approved Toxic Organic Management Plan in lieu of routine monitoring for Total Toxic Organics (TTO). A Solvent Management Plan was prepared for SKF in August 1988 by Lancy Environmental Services Company Division, Lancy International.[6] The SKF Solvent Management Plan can be found in appendix F.

The on-site injection well used by SKF for disposal of non-contact cooling water is operated under Underground Injection Control Permit No. PAS5A191BFRA, effective December 28, 1989 (until midnight December 28, 1999).[32]

2.6 Remedial Action to Date

In 1983, PA DER detected TCE contamination in samples from SKF's on-site pumping well. Analysis revealed TCE concentrations in the range of 10 to 31 ppb. The water withdrawn from this well was used for non-contact cooling water and then injected into an on-site dry well for disposal. TCE concentrations at the injection were consistent with concentrations at the pumping well.[3] Soil samples in and around two on-site former sludge beds indicated that the beds were the source of TCE contamination. As part of a planned closure, the concrete and block structures of the beds and some surrounding soil were removed in April 1985.[7,8] Samples collected in May 1985 indicated that TCE was still present in the soil up to 710,000 ppb.[24] In October 1985, additional soil was removed to a depth of 12 to 15 feet. PA DER determined that, at this depth, the soil was acceptable. A value of 20 ppm on the HNU meter was determined by PA DER to be the guide to soil removal. This value was based on a correlation of HNU readings to laboratory analysis. Samples collected in October 1985 at the base of the excavation revealed TCE up to 1,300 ppb.[33,34]

In July 1984, a pilot test was performed at the site to determine the feasibility of using an air stripper to remove TCE from contaminated groundwater withdrawn from the pumping well. The initial study indicated that the stripper reduced the TCE concentration to 0.5 ppb before injection.[3,18] Although it is expected that TCE concentrations at the pumping well will reduce over time, the air stripper will be used until drinking water standards have been achieved. A groundwater monitoring program will involve monthly sampling of the intake and injection wells and quarterly sampling of five monitoring wells.[8] Analysis of samples collected October 10, 1990 only detected 3.3 ppb TCE in the intake well and 20 ppb in MW no. 1.[35] The laboratory report for the October 1990 sampling can be found in appendix C.

SECTION 3

3.0 ENVIRONMENTAL SETTING

3.1 Water Supply

Residents within three miles of the site are either served by a public water supply company or maintain private wells and/or springs. Based on a count of homes taken from U.S.G.S. topographic quadrangles (times 3.8 persons per house) and information supplied by SBWA, approximately 16,203 people in the study area rely on groundwater. It is estimated that 3,283 people rely on private wells and/or springs.[1,36,37]

SBWA is supplied with surface water from three intakes and with groundwater from a spring. The Roxbury intake is located approximately eight miles west-northwest and upstream of the site on Trout Run. This intake is capable of yielding 1,400,000 gallons per day. The second intake is located about five miles south-southeast and upstream of the site on Furnace Run, near Mainsville. The third intake is located near Cleversburg, on Burd Run, about five miles east-southeast and upstream of the site. The combined yield of the Furnace Run and Burd Run intakes ranges from 20,000 to 30,000 gallons per day. SBWA uses approximately 1,000 gpm of groundwater from Dykeman Spring, located 0.8 mile east-southeast of the site. The SBWA system has an integrated water supply system. Two reservoirs, located approximately 1.2 miles southeast of the site, are used for storage. SBWA serves a population of about 12,920 people within Shippensburg Borough, Shippensburg Township, and Southampton Township.[1,36,37]

The only private well identified within the study area is located approximately 1.3 miles east of the site. Based on the geologic map (figure 3.1, page 3-2), the well probably draws from the Zullinger Formation.[1,38,39]

3.2 Surface Waters

It is expected that site surface water runoff will be flow to the northeast via storm sewers. The flow should be received by Middle Spring Creek, a perennial stream located approximately 1/2 mile from the site. The stream originates from Dykeman Spring approximately 0.8 mile east of the site and flows north-northwestwardly to its confluence with Conodoguinet Creek, approximately 6.9 stream miles from the site. Conodoguinet Creek is listed as an approved cold-water fishery by the Pennsylvania Fish Commission.[1,40]

EXPLANATION

Om	- Martinsburg Formation;	Os	- Stonehenge Formation;
Oc	- Chambersburg Formation;	Csg	- Shadygrove Formation;
Osp	- St. Paul Group;	Cz	- Zullinger Formation.
Ops	- Pinesburg Station Formation;	Ce	- Elbrook Formation;
Orr	- Rockdale Run Formation;	Cwb	- Waynesboro Formation;
		Ct	- Tomstown Formation.

SOURCE: ATLAS OF PRELIMINARY GEOLOGIC QUADRANGLE MAPS OF PENNSYLVANIA

FIGURE 3-1

GEOLOGIC MAP

SKF INDUSTRIES INC. ROLLER BEARINGS
Shippensburg, Cumberland Co., PA

NUS CORPORATION

According to the National Wetlands Inventory, a palustrine forested wetland area, approximately 10 acres in size, is located along Middle Spring Creek, approximately 1.7 stream miles from the site.[41]

3.3 Hydrogeology

The geologic and hydrogeologic conditions in the study area were researched as part of the site investigation. A preliminary literature review was conducted to determine surface and subsurface geologic conditions, soil character, and the status of groundwater transport and storage.

3.3.1 Geology

The site is located within the Cumberland Valley in the Great Valley Section of the Valley and Ridge Province. The site is underlain by the consolidated sedimentary rocks of the Cumberland Valley sequence. This sequence forms the northwestern limb of a regional anticline that has its axis in the South Mountain. Rocks of this sequence are deformed into asymmetric folds and steeply dipping faults that are subparallel to the valley trend. Limestone is the dominant rock type in the sequence. The lower three limestone units contain significant amounts of dolomite, siltstone, shale, and some sandstone. The uppermost unit in the Cumberland sequence is a thick shale. Two systems of faults occur within the study area. The first system trends northeast-southwestwardly, and the second trends east-westwardly. The site is located about 0.2 mile north of the biggest fault, trending to the east-west. The land is gently rolling with a maximum relief of 250 feet.[1,42]

The site is directly underlain by the Ordovician age Rockdale Run Formation (see figure 3.1, page 3-2). The lower one-fourth to one-third of this formation is distinguished by abundant, very light gray to light pinkish-gray, finely laminated to homogeneous, medium-bedded limestone. The upper two-thirds to three-fourths of the formation is composed of a light gray, medium- to thick-bedded, very fine-grained, detrital and skeletal lime stone. The estimated thickness is between 2,000 and 2,500 feet. The joints have a blocky pattern. They are moderately well developed, moderately abundant, regularly spaced, open, and steeply dipping.[42,43]

Stratigraphically underlying the Rockdale Run Formation is the Ordovician age Stonehenge Formation. The formation crops out about 0.2 mile east and 1.8 miles west of the site. The Stonehenge Formation is typically a medium-bedded, very fine- to fine-grained, light to medium gray limestone containing abundant zones of detrital and skeletal carbonate material. The thickness is estimated to be 500 feet. The joints have a seamy pattern and are well to poorly developed. They are moderately abundant, open, and steeply dipping to vertical.[42,43]

Stratigraphically underlying the Stonehenge Formation is the Cambrian age Shadygrove Formation. The formation crops out about 0.5 mile east and 1.5 miles west of the site. The formation is characterized by thick to massive beds of light blue-gray limestone. The maximum thickness varies from 800 to 1,000 feet. The joints have a blocky pattern. They are moderately well developed, moderately abundant, regularly spaced, open, and steeply dipping.[42,43]

Stratigraphically underlying the Shadygrove Formation is the Cambrian age Zullinger Formation. The formation crops out about one mile east and 0.3 mile west of the site. The formation consists of thick to massive beds of dark blue-gray limestone, typically containing abundant crenelated siliceous seams and less commonly having siliceous bands that weather in relief. The thickness is about 2,500 feet. The joints have a blocky pattern. They are moderately well developed, moderately to highly abundant, regularly spaced, open, and steeply dipping.[42,43]

Stratigraphically underlying the Zullinger Formation is the Cambrian age Elbrook Formation, which crops out about 0.5 mile south of the site. The formation is composed of thick to massive beds of platy, highly calcareous shale and argillaceous limestone that are light gray with a bluish cast and weather to buff brown. The maximum thickness is about 3,500 feet. The joint pattern is irregular and moderately developed. The joints are moderately abundant and irregularly spaced; most are open, but some are filled with quartz and calcite.[42,43]

Stratigraphically underlying the Elbrook Formation is the Cambrian age Waynesboro Formation, which crops out about 2.5 miles southeast of the site. The formation is composed of thick beds of very fine-grained, reddish-brown, weathered quartzite that contains worm burrows and ripplemarks. The quartzite is interbedded with siltstone and silty argillite. The estimated thickness ranges from 1,000 to 1,500 feet. The joints have a blocky pattern and are steeply dipping and open.[42,43]

Stratigraphically underlying the Waynesboro Formation is the Cambrian age Tomstown Formation, which crops out about 2.8 mile southeast of the site. The formation is composed of massive beds of dark blue-gray and dark gray, silty, mottled dolomite. The thickness is estimated to be 1,000 to 2,000 feet. The joints have a blocky pattern. They are moderately to well developed, moderately abundant, irregularly spaced, open, and steeply dipping.[42,43]

The Ordovician age Martinsburg Formation, which is the youngest unit exposed in the area, crops out about two miles northwest of the site. The Martinsburg Formation is separated into three members. In the upper and lower members, dark gray shale is dominant, but thin interbeds of siltstone and fine-grained graywacke are common, especially in the upper member. The graywacke member, several hundred feet thick, separates the two shale sequences. The thickness of the Martinsburg Formation exceeds 1,000 feet. The cleavage is dominant and highly developed. The joints are also present and are irregularly spaced, open, and nearly vertical.[42,43]

Stratigraphically underlying the Martinsburg Formation is the Ordovician age Chambersburg Formation. The formation crops out about two miles northwest of the site. The Chambersburg Formation is composed of a dark gray, thin-bedded, platy to nodular limestone that commonly weathers into distinctive cobbles that litter the ground surface. The thickness is about 650 feet. The joints have a blocky pattern. They are well developed, steeply dipping, and open.[42,43]

Stratigraphically underlying the Chambersburg Formation is the Ordovician age St. Paul Group. The rocks of this group crop out approximately 0.8 mile west of the site. The St. Paul Group consists dominantly of light to medium gray, thick-bedded limestone and minor amounts of dolomite. The group is divided into three subdivisions. The lower and upper subdivisions are characterized by thick beds of light gray, very fine-grained limestone. The medial part of the group consists of abundantly fossiliferous, medium gray, thin- to medium-bedded cobbly to nodular limestone. The thickness is about 600 feet. Most of the joints have a blocky pattern, but some have a platy pattern. The joints are moderately well developed, moderately to high abundant, and fairly regularly spaced; most are open, but some are filled with calcite. They are steeply dipping to vertical.[42,43]

Stratigraphically underlying the St. Paul Group is the Ordovician age Pinesburg Station Formation. The formation crops out about 0.8 mile northwest of the site. The Pinesburg Station Formation is composed of massive beds of dolomite that weather buff orange and light gray to medium light gray with a brownish hue. The beds are sparsely bounded but commonly have no sedimentary structure. A few interbeds of blue-gray limestone are also present. The estimated thickness ranges from less than 100 to 300 feet. The joints are abundant, widely spaced, open, and vertical. They have a blocky pattern.[42,43]

3.3.2 Soils

The SKF Bearing Industries Company site is entirely underlain by Hagerstown silt loam, three to eight percent slopes (HeB).[44]

The Hagerstown Series consists of deep, nearly level to steep, well-drained, medium-textured to fine-textured soil on upland. In a representative profile, the plow layer is a dark reddish-gray silt loam about 10 inches thick. The subsoil extends to a depth of 56 inches. It is a reddish-brown, friable to firm silty clay loam to a depth of 21 inches and red and yellowish-red firm to very firm silty clay in the lower part. The substratum extends to a depth of 73 inches, and it is yellowish-red, very firm silty clay loam.[44]

The HeB has the profile described as representative of the series. Runoff is medium. Included with this soil are small areas in which the plow layer is a silty clay loam and a few small areas where coarse fragments of chert or quartz occur throughout the profile.[44]

The soil permeability ranges from 0.6 to two inches per hour, and the soil reaction ranges from 5.1 to 7.3.[44]

3.3.3 Groundwater

In the study area, water occurs in fractures and solution openings in the consolidated rocks. Primary porosity and hydraulic conductivity are low in the consolidated rocks. Secondary porosity and conductivity have been developed along fractures and bedding planes in the carbonate rocks as a result of the solution. All formations within the study area are water bearing. They are interconnected through the fractures and can be considered as a regional common hydrogeologic unit.[42]

The Rockdale Run Formation yields high quantities of groundwater. The median yield is 405 gpm, and the maximum yields for the formation range from 500 to 600 gpm. The median specific capacity is 12 gpm per foot. The median well depth is only 82 feet, the shallowest in all rock units in the Cumberland Valley. No large specific-capacity or high-yielding wells produce from zones below 200 feet.[42]

The data of five monitoring wells completed on the site show that the average groundwater level is 37.6 feet, the average depth to the bedrock is 20.2 feet, the average well yield is 23.3 gpm, and the average well depth is 88.6 feet (see appendix B).[3]

In the carbonate rocks, the groundwater table is very similar to the land surface but with less relief. Based on topography, the role of the stream as a discharge point for groundwater, and on-site monitoring well data, the direction of the shallow groundwater flow beneath the site is expected to be to the northeast toward Middle Spring Creek (see appendix B).[1,3]

3.4 Climate and Meteorology

According to climatological data for the site location in Shippensburg provided by the National Climatic Data Center, the daily average temperature (based on the period from 1951 to 1980) is 52.4°F. The average annual precipitation is 38.8 inches. The mean annual lake evaporation is approximately 30 inches. Therefore, the annual net precipitation averages 8.8 inches per year. The 1-year, 24-hour rainfall is approximately 2.5 inches.[45,46,47]

3.5 Land Use

The area to the northwest, north, and east of the site is high-density residential, industrial, and commercial within the town of Shippensburg. The site is bordered to the south by railroad tracks; beyond the tracks lie the Shippensburg Fairgrounds, farm land, and undeveloped areas. Outside Shippensburg, the area is low-density residential communities, farmland, or undeveloped land.[1,2]

3.6 Population Distribution

The population estimated to live within a 1-mile radius of the site is 4,480 people; from 1 to 2 miles, the population is estimated to be 3,302 people; and from 2 to 3 miles, the population is estimated to be 2,424 people. Therefore, approximately 10,206 people live within a 3-mile radius of the site. These figures are based on a house count taken from the U.S.G.S. topographic quadrangles, multiplied by 3.8 people per house.[1]

3.7 Critical Environments

According to the United States Department of the Interior, Fish and Wildlife Service, no known endangered species reside within a three-mile radius of the site. However, two federally listed endangered birds are expected to be found as transient species in the vicinity of the site. These species are the bald eagle (Haliaeetus leucocephalus) and the peregrine falcon (Falco peregrinus). There is no listed critical habitat for these species in the project area.[48]

A palustrine forested wetland area is located approximately 1.7 stream miles north of the site along Middle Spring Creek. This wetland area is approximately 10 acres in size.[41]

SECTION 4

4.0 WASTE TYPES AND QUANTITIES

Hazardous wastes generated on site have been classified by the facility as including the following EPA RCRA waste identification numbers: F001 (spent halogenated solvents), F003 (spent nonhalogenated solvents), F006 (wastewater treatment sludges from electroplating operations), F007 (spent cyanide plating bath solutions), F008 (plating bath sludges), F009 (spent stripping and cleaning bath solutions), F010 (quenching bath sludge from oil baths from metal heat treating), F011 (spent cyanide solutions from salt bath pot cleaning), P029 (copper cyanides), P098 (potassium cyanide), P104 (silver cyanide), P106 (sodium cyanide), and D001 (waste petroleum naphtha). The waste codes presented were derived from the facility's Notification of Hazardous Waste Activity (May 4, 1983), a PA DER hazardous waste inspection report for the August 25, 1987 inspection, and a quarterly hazardous waste report for the period ending September 30, 1990 and may not totally represent all wastes present on site. SKF discontinued heat treating operations in the late 1980s, and it is unlikely that wastes coded as F010 and F011 will continue to be produced on site. The facility's hazardous waste stream consists of solvents (primarily mineral spirits) and trichlorotrifluoroethylene used for parts and tool degreasing, wastewater treatment sludges, plating bath residues, and spent bath solutions from electroplating operations. Treatment sludges may contain copper cyanide, potassium cyanide, silver cyanide, and sodium cyanide. The facility produces approximately 41,267 pounds of hazardous waste per month.[15,49,50]

Groundwater sampling conducted since 1983 by PA DER and consultants for SKF has revealed TCE (up to 31 ppb), chloroform (up to 71 ppb), and dichlorobromomethane (2 ppb). Soil samples taken in the location of the former sludge settling beds have contained TCE (up to 710,000 ppb), tetrachloroethylene (4,670 ppb), chloroform (980 ppb), 1,2-trans-dichloroethylene (1,800 ppb), toluene (240 ppb), chromium (48 ppm), lead (155 ppm), copper (1,100 ppm), cadmium (4.1 ppm), nickel (140 ppm), and zinc (2,800 ppm). The groundwater contamination and soil contamination have been attributed to the former sludge settling beds.[3,7,8,19,20]

Wastes coded F006 are hauled and received by Envirite Corporation, of York, Pennsylvania (EPA ID No. PAD010154045). Wastes coded F007 are hauled and received by Tecnic, Incorporated, of Cranston, Rhode Island (EPA ID No. RID001200252), and Vanguard Research Industries, Incorporated, of South Plainfield, New Jersey (EPA ID No. NJD990753493). Wastes coded D001 are hauled and received by Safety-Kleen Corporation, of New Kingston, Pennsylvania (EPA ID No. PAD000738823).[50]

Nonhazardous waste produced includes sludge from fines of an abrasive media used for cleaning parts, non-contact cooling water, wastewater containing pretreated process wastewater and sewage, metal chips from machining operations, and municipal trash.[3,51] No estimate on the volume of nonhazardous waste is available.

4.1 Solid Waste Management Units

Thirteen SWMUs have been identified for the site: the heavy metal treatment system, the batch treatment system, the sludge settling tanks, the old sludge filter beds, the hazardous waste storage area, the plating line room drum storage area, the copper destruct system, the cyanide destruct system, the waste oil holding tanks, the freon distilling system, the metal chip storage area with oil collector, the Mecha-sludge settling tank, and the municipal trash dumpster.[2,4]

4.1.1 SWMU No. 1
Heavy Metal Treatment System

The heavy metal treatment system is located on the first floor of the production building, adjacent to the zinc-phosphate line. This unit is situated on a concrete floor and is surrounded by a three-inch-high concrete berm containment barrier. The treatment system receives waste from copper and nickel strike baths, a zinc-phosphate rinse, and a vibratory finishing system. The system includes settling tanks to collect metal hydroxide sludge, which is removed by an outside contractor.[2,4]

Date of Start-Up

According to an SKF representative, this unit began operating in the early 1980s.[4]

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The heavy metal treatment system receives waste (code F006) from the copper and nickel strike baths, the zinc-phosphate rinse, and the vibratory finishing system. The treatment system is designed to remove metals from solution by precipitating with sodium and/or potassium hydroxide. The resulting waste is a metal hydroxide sludge, sodium nitrate, and potassium nitrate.[4]

Release Controls

The system is located on a concrete floor and surrounded by a three-inch-high concrete berm. An A.D.T. alarm system is located in each of the hazardous waste generation and treatment areas and provides 24-hour surveillance of systems.[2,4,49]

History of Releases

No releases have been documented for this unit.

4.1.2 SWMU No. 2
Batch Treatment System

The batch treatment system comprises two self-contained systems for treating either acid or cyanide wastes and receives a sulfuric-nitric acid combination from bright dip and wastes from laboratory sinks and floor drains in the plating areas.[2,4]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

This unit treats waste (code F006, F007, and F009) acid (sulfuric-nitric combined), low-concentration cyanide, and waste from laboratory sinks and floor drains. Treatment of wastes handled by this unit produces sludge (containing metals) that is pumped to the outside settling tanks. Effluent is pH adjusted before it is discharged to the public sewer system.[2,4]

Release Controls

The batch treatment system is located on a concrete floor. Part of the system is enclosed by a two-foot-high concrete and block dike, and part of the system is surrounded by a three-inch-high concrete dike.[2]

History of Releases

No releases have been documented for this unit.

4.1.3 SWMU No. 3
Sludge Settling Tanks

The sludge settling tanks are above-ground tanks that replaced the old in-ground sludge settling tanks that were closed in October 1985. The tanks receive treated waste from the heavy metal treatment system settling tanks, copper and cyanide destruct systems, and the batch treatment system.[2,4] The material used for the construction of the tanks is not known.

Date of Start-Up

The sludge settling tanks were placed on line in October 1983.[6]

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

Wastes managed by this unit are coded F006 and F008. The sludge settling tanks are used to settle sludge primarily containing metal hydroxide from the heavy metal treatment system. The sludge may contain silver, copper, zinc, sodium, and/or potassium cyanides. Effluent is pH adjusted before final discharge to the public sewer system.[4]

Release Controls

The tanks are located on concrete pads with no secondary containment in place.[2]

History of Releases

No releases have been documented for this unit.

4.1.4 SWMU No. 4
Old Sludge Filter Beds

The sludge filter beds were utilized as a final step in the treatment of chemically treated wastes and floor spills from the plating and bright dip process and untreated waste from the phosphatizing processes. Use of the beds was discontinued in October 1983.[6,7]

Date of Start-Up

The sludge beds were installed in 1964.[6]

Date of Closure

The units were removed in April 1985, and closure was completed in October 1985.[7,33]

Wastes Managed

The filter beds were used to settle and collect sludge containing metal hydroxide from the heavy metal treatment system and untreated wastes from the phosphatizing process. This unit handled wastes coded F006 and F008.[6]

Release Controls

The basins were originally designed to allow the supernatant to permeate through the porous block walls. Secondary containment was not used.[2,6]

History of Releases

TCE contamination of the soil and groundwater has been attributed to this unit.[3,6,7]

4.1.5 SWMU No. 5
Hazardous Waste Storage Area

The hazardous waste storage area is located in the basement near the cyanide destruct system. The area is used for temporary (less than 90 days) storage of drummed hazardous waste.[2,4]

Date of Start-Up

An SKF representative reported that he believed that use of the area began in 1949.[4]

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

Wastes in this area are stored in drums and may include wastes coded F001, F003, F007, F009, F010, F011, and D001: acid strip, sodium nitrate combined with potassium nitrate, and phosphate sludge from the zinc-phosphate line. Wastes are shipped off site for disposal.[2,4]

Release Controls

The area used for hazardous waste storage has a concrete floor and does not have any floor drains. However, it should be noted that a large hole was observed in the floor; this could result in spillage being released to the soil. The hole was covered with a metal plate.[2]

History of Releases

No releases have been documented for this unit.

4.1.6 SWMU No. 6
Plating Line Room Drum Storage Area

Once or twice a year, or as necessary, plating line baths are dumped and replaced with fresh material. Baths are emptied into 55-gallon drums and stored in the plating line area before disposal by an outside contractor.[4]

Date of Start-Up

Information regarding start-up date was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

Waste managed in this area are coded P029, P098, P104, and P106. This area is used for the temporary storage of sodium cyanide from a dumped plating line bath. The waste material is stored in drums until removed by an outside contractor for disposal.[4]

Release Controls

Waste sodium cyanide is stored in drums in the plating line room, which is underlain with chemical-resistant tile on a concrete floor. The area is surrounded by a six-inch-high concrete berm. Floor drains within the bermed area lead to the batch treatment system in the basement.[2,4]

History of Releases

No releases have been documented for this unit.

4.1.7 SWMU No. 7
Copper Destruct System

The copper destruct system treats low-concentration waste from the bright dip line copper solution tank. This system is located in a separate room in the basement.[2,4]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

This unit manages waste coded F009 and P029. This system receives effluent from the bright dip line copper solution tank, which contains copper cyanide. The effluent from this unit is received by the sludge settling tanks.[4]

Release Controls

The copper destruct system is located on a concrete floor and is surrounded by a four-inch-high concrete berm.[2]

History of Releases

No releases have been documented for this unit.

4.1.8 SWMU No. 8
Cyanide Destruct System

The cyanide destruct system treats only low-concentration cyanide waste from the cyanide treatment tanks in the plating lines. This system is located in a separate room in the basement. Sodium hydroxide, nitric, muratic, and sulfuric acid were stored in this room.[2,4]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The cyanide destruct system receives waste cyanide treatment solution from the plating lines. This solution contains sodium hydroxide, chlorine, and copper inhibitor. Effluent from this unit is received by the sludge settling tanks.[2,4]

Release Controls

The unit is located on a concrete floor with a sump. Any spills would collect in the sump and then be pumped back into the system.[2,4]

History of releases

No releases have been documented for this unit.

4.1.9 SWMU No. 9
Waste Oil Holding Tanks

The waste oil holding tanks are three individual above-ground tanks used to hold soluble and insoluble waste oil before off-site disposal by an outside contractor. Two of the tanks are approximately 500 gallons each and hold the soluble oil. The insoluble oil is contained in a 275-gallon tank.[2,3]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

Two of the holding tanks contain waste soluble oil that was used for cutting and grinding operations in the machine shop. The third tank contains waste insoluble oil that was used as a preservative on parts and tools throughout the shop. The tanks are emptied by Safety-Kleen.[4]

Release Controls

The tanks are located outside on a gravel base. No formal secondary containment system has been installed.[2]

History of Releases

No releases have been documented for this unit.

4.1.10 SWMU No. 10
Freon Distilling System

Freon 'R' T-DF and Genesolv-D (trichlorotrifluoroethane) are used in as a cleaning agent in a vapor degreaser before plating. Spent material is reclaimed via a distilling system located in the plating room.[2,4]

Date of Start-Up

An SKF representative reported that use of the distilling system began in 1984 or 1985.[4]

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The freon distilling system receives contaminated Freon 'R' T-DF and Genesolv-D (trichlorotrifluoroethane) from a vapor degreaser used for cleaning parts before plating. The waste handled by this unit is coded F001.[4]

Release Controls

The freon still is located in the plating line room. This area is underlain with chemical-resistant tile over concrete. The still is located outside the area enclosed by a concrete berm. Floor drains in the area are connected to the batch treatment system in the basement.[2,4]

History of Releases

No releases have been documented for this unit.

4.1.11 SWMU No. 11
Metal Chip Storage Area with Oil Collector

Steel and brass chips and scrap from machining operations are collected and stored in drums and truck dump bodies. The brass is sold to a recycler, and the steel is sold as scrap. An oil collector is located at the tailgate of the dump truck body to collect oil or oil-contaminated rainwater draining from the scrap metal in the dump truck.[2,4]

Date of Start-Up

Information regarding the date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The metal chip storage area with oil collector is used for the temporary storage of brass and steel chips and scrap from machining operations and may contain wastes coded F001. Tap Magic Cutting Fluid, which contains 1,1,1-trichloroethane, is used in machining operations to prevent damage to the cutting tools or parts being made. Non-soluble oil is also used on raw material, finished parts, and cutting tools as a preservative or rust preventor. Both types of oil accumulate on scrap material and metal chips. Because the trucks used for storage of the scrap are parked on a hill, the oil drains into a collector below the tailgate. This is removed by an outside contractor for disposal.[2,4]

Release Controls

The metal chips and scrap are stored in drums and dump truck bodies that are located on a concrete floor; however, no formal secondary containment system has been installed for this unit. It should be noted that, due to the hill the trucks are parked on, a storm drain is located beneath the oil collector. It was not known where the storm drain discharges.[2,4]

History of Releases

No releases have been documented for this unit.

4.1.12 SWMU No. 12
Mecha-Sludge Settling Tank

The Mecha-sludge settling tank is an abrasive slurry settling tank. The sludge is from fines of an abrasive media that grinds impurities off a part in a finishing process. Water is used to wash the media and pick up the fines from the part and the media.[4,51]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The Mecha-sludge settling tank receives nonhazardous material from an abrasive slurry finishing process. The tank settles out fines of the abrasive media and impurities from processed parts. The abrasive slurry media is washed with water, which picks up the fines. It takes approximately six months for one to two feet of sludge to accumulate. The sludge is removed by an outside contractor with the sludge from the sludge settling tanks.[4,51]

Release Controls

The Mecha-sludge settling tank is a concrete and block tank constructed below grade. No formal containment system has been installed.[2]

History of Releases

No releases have been documented for this unit.

4.1.13 SWMU No. 13
Municipal Trash Dumpster

The facility uses an outside trash dumpster for the disposal of office waste and miscellaneous solid waste.[2,4]

Date of Start-Up

Information regarding date of start-up was not available.

Date of Closure

This unit is currently active, and its use is not expected to be discontinued.[2,4]

Wastes Managed

The dumpster is used for the disposal of nonhazardous office and miscellaneous solid waste.[2,4]

Release Controls

No formal release controls are in place for this unit.[2]

History of Releases

No releases have been documented for this unit.

SECTION 5

5.0 FIELD TRIP REPORT

5.1 Summary

On November 15, 1990, NUS FIT 3 personnel Vincent Shickora and Jeffrey Miller conducted an EPI preliminary assessment of the SKF Bearing Industries Company site in Shippensburg, Pennsylvania. The FIT was met and accompanied on site by Thomas Taylor and Paul Ritenour, of SKF Bearing Industries Company. Photographs were taken in limited locations on site (see figures 5.1 and 5.2, pages 5-5 and 5-6, and the photograph log, section 5.4).

5.2 Persons Contacted

5.2.1 Prior to Field Trip

Donna Santiago
U.S. EPA
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19107
(215) 597-1110

Gregory Ham
U.S. EPA
841 Chestnut Building
Ninth and Chestnut Streets
Philadelphia, PA 19107

Thomas Taylor
SKF Bearing Industries Company
West King Street
Shippensburg, PA 17257
(717) 532-2111

Bill McGlocklin
SKF Bearing Industries Company
West King Street
Shippensburg, PA 17257
(717) 532-2111

5.2.2 At the Site

Paul Ritenour
SKF Bearing Industries Company
West King Street
Shippensburg, PA 17257
(717) 532-2111

Thomas Taylor
SKF Bearing Industries Company
West King Street
Shippensburg, PA 17257
(717) 532-2111

5.2.3 Water Supply Well Information

Residents within the study area are supplied by public water companies or maintain private wells and/or springs. No home well surveys were distributed.

5.3 Site Observations

- The mini-alert was set at the X1 position; no readings above background were recorded.
- The OVA background reading was 3.2 ppm inside the plant, 20 ppm in the plating line room, 8 ppm in the hazardous waste storage area, and 12 ppm in the cyanide destruct area.
- The facility's main building was a one-story structure with a small basement.
- An office building was detached from the main building.
- The heavy metal treatment system was on a concrete floor surrounded by a three-inch-high concrete berm.
- The zinc phosphate line was underlain by concrete and surrounded by a three-inch-high metal angle iron.
- The bright dip room had a concrete floor with no secondary containment.
- An oil storage area, containing oil and grease, had a concrete floor and cinderblock walls; there was no additional containment.
- Three empty plastic sulfuric acid barrels were located outside the oil storage area. The barrels were stored on an asphalt driveway.
- The plating line room had a chemical-resistant tile floor underlain by concrete. Floor drains led to the batch treatment system in the basement. A six-inch-high concrete berm enclosed the plating line. A vapor degreaser and a solvent still were located in this room but outside the berm.
- Solvent bins in machining areas contained Safety-Kleen 105 solvent.
- Large air compressors, which use non-contact cooling water, were located in the boiler room in the basement.

- Steel chips, brass, and scrap are stored in 55-gallon drums, which are located on a concrete floor. The drums are emptied into a tractor trailer parked in the area. An oil collector was located under the tailgate of the truck. A storm drain was located under the oil collector. Oil stains were observed near the drain.

- A former furnace room was being repainted. All equipment and furnaces had been removed.

- Three waste oil holding tanks were observed near the former furnace room. The tanks were located on gravel without any secondary containment. Oil-stained soils were observed near the tanks.

- An injection well with a stripping tower was observed on site.

- Two sludge settling tanks were located near the southeastern corner of the building. The tanks were sitting on concrete pads without any secondary containment.

- An area reported to be the location of former sludge settling beds had been excavated.

- An on-site production well was located near the excavation area.

- A final clarifying tank and a Mecha-sludge settling tank were located on both sides of the excavated area.

- A batch treatment system was observed in the basement.

- A pH adjustment tank and final effluent automatic sampling box were observed in the basement.

- A secured cyanide storage area was located in the basement. The floor was concrete and did not have any secondary containment.

- A copper destruct system was located in the basement in a separate room with a concrete floor and a four-inch-high berm.

- A hazardous waste storage area was located in the basement. This area was unsecured and had a concrete floor without secondary contaminant. A hole in the floor, which would allow spills to be released to the outside, was observed covered with a metal plate. Drums in this area were marked as containing acid strip and sodium nitrate mixed with potassium nitrate.

- A cyanide destruct system was located in the basement in a separate room on a concrete floor. The floor was slanted so that spills would collect in a sump and be pumped back into the system. Drums of sodium hydroxide, nitric acid, muriatic acid, and sulfuric acid were observed in this area.

- Site access was restricted from the east, south, and west by an eight-foot-high chain-link fence. Two gates were located adjacent to the SKF building on the eastern and western sides and allowed access to the site.

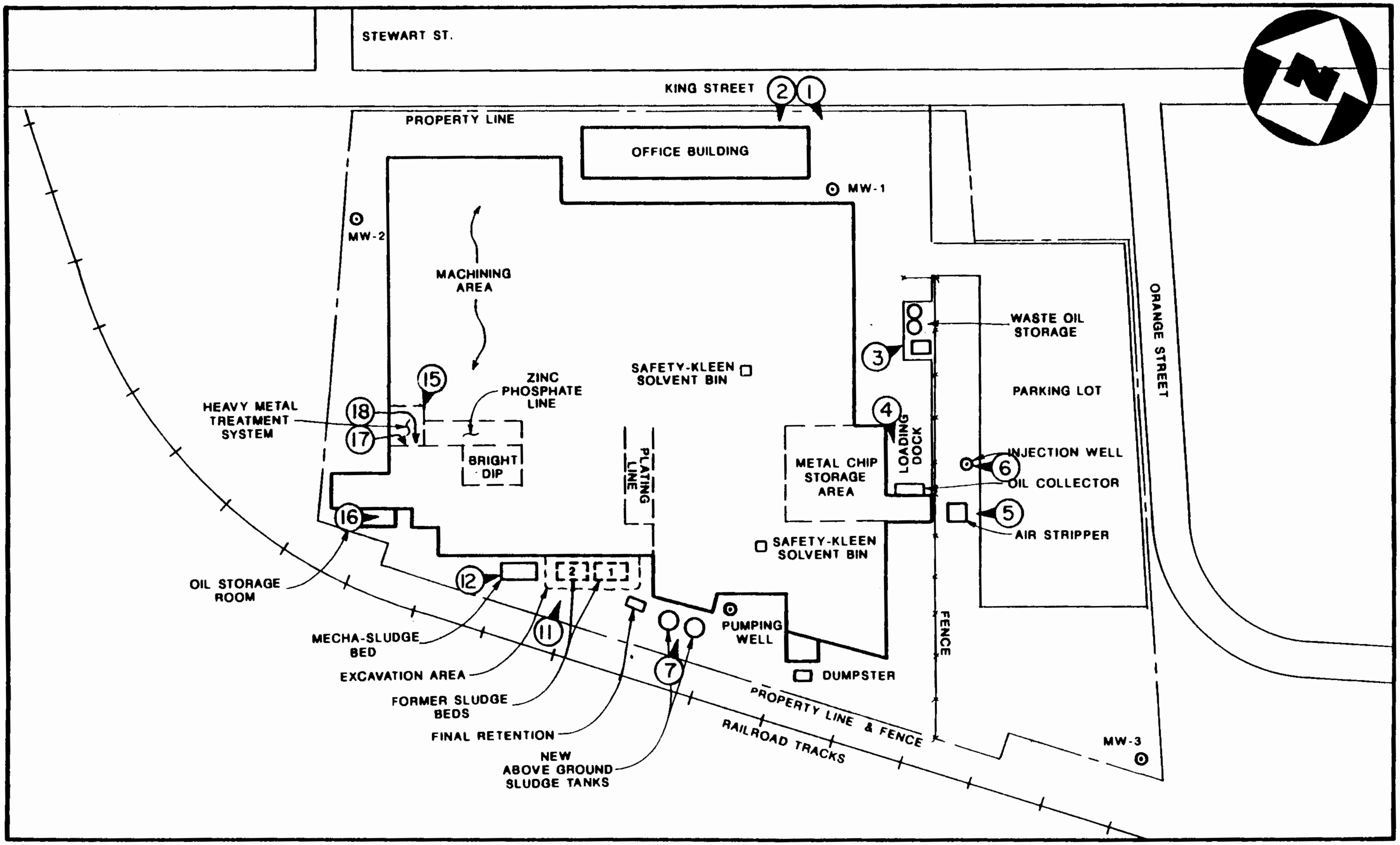
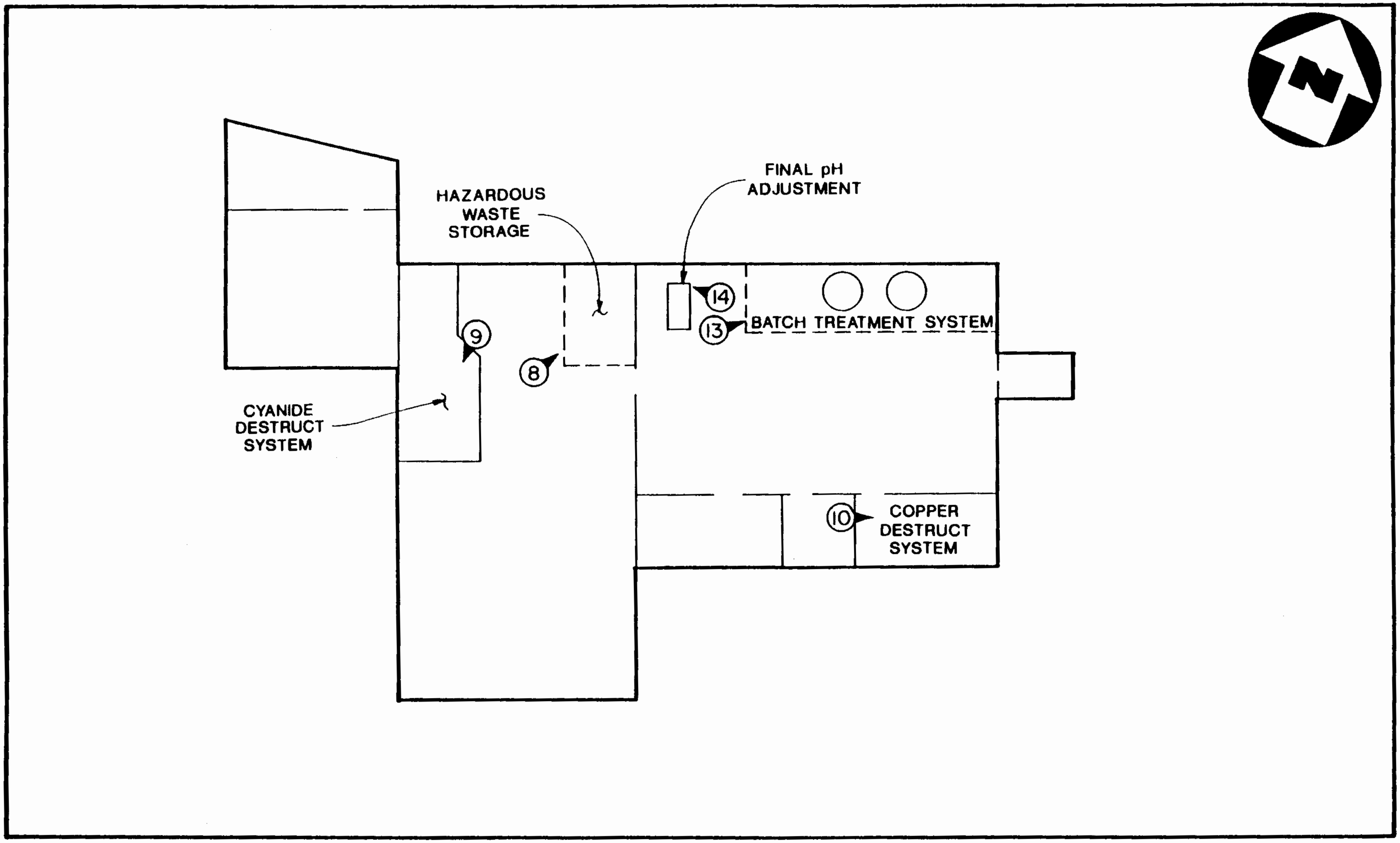


PHOTO LOCATION MAP
SKF INDUSTRIES, SHIPPENSBURG, PA
(NO SCALE)

FIGURE 5.1

NUS CORPORATION



BASEMENT PHOTO LOCATION MAP
SKF INDUSTRIES, SHIPPENSBURG, PA
(NO SCALE)

FIGURE 5.2

NUS CORPORATION